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CURRENT SERIAL RECORDS

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Letter No. 33

TELEPHONE ENGINEERING INFORMATION

These information letters are intended to provide a means for answering questions that arise in the field and to inform the field of new developments. They are not intended to be instructions nor to replace in any respect the approved channels for establishing requirements and procedures.

The following REA TE & CM Sections and Addenda have been issued since the last Newsletter.

Add. 1, 602, Clearances	October 1963
Add. 1, 635, Construction of Aerial Cable Plant	October 1963
Add. 2, 611, Design of Pole Lines	October 1963
Add. 1, 630, Design of Aerial Cable Plant	October 1963
New 628, Plastic Insulated Cable Plant Layout	October 1963
Rev. 210, Telephone System Design Criteria - Engineering Time Periods	October 1963
Rev. 327, Application Guide for the Preparation of Part III, Specification for Detailed Direct Distance Dialing	January 1964
Add. 3, 510, Telephone Traffic - Dial CO switch quantities	December 1963
Rev. 51, 102, Numerical Index	January 1964
New 290, Expansion of Existing Facilities with Trunk and Subscriber Carrier	November 1963
Add. 1, 325, Application Guide for the Preparation of Detail Dial CO Equipment Specifications	September 1963
Add. 1, 330, Maximum Electrical Subscriber Loops Attained with the Use of Long Line Adapters	November 1963
Add. 1, 340, Use of Line Concentrators	October 1963
Add. 1, 620, Design and Construction of Figure 8 Distribution Wire	September 1963
New 905, Cable Carrier Systems and Carrier Frequency Transmission Through Cable	November 1963

Subscriber Loop Survey

In January 1964, the System Design Group undertook a sampling survey of subscriber circuits in REA borrowers' plant. The survey is intended to provide data that will be useful in appraising the quality of present-day plant, the effects of upgrading and in evaluating new developments and services.

The survey covers a total of 1,000 subscriber loops drawn from 781 exchanges of 439 borrowers. Selection of the plant to be studied was made under a statistical sampling plan designed to produce a sample that is representative of the overall plant. Response has been good. We are short data on only 46 loops but we need data from each and every borrower that was asked to participate. We find that approximately 30% of the loops require clarification. For a meaningful report this additional information is needed. Your assistance in getting prompt replies is appreciated. The data are being computer processed to provide estimates of the important physical, transmission and economic characteristics of the subscriber plant. Results of the study of physical characteristics are expected to be completed about July 1.

North Central Area Line Fill Study

This area is conducting a line-fill study covering maximum and average line-fills for 1000 exchanges. The results are expected to be available in May or June.

Single Party Cable Carrier

REA is planning to issue a proposed specification for single party cable type subscriber carrier for submission to the industry for comment. Since a keen interest is building up for upgrading and other uses this will set forth minimum requirements for equipment of this type. One of the more important features will be a proposed method of utilizing carrier frequencies, levels, and direction of transmission in such a manner that subscriber cable carrier of one manufacturer will be compatible with that of all other manufacturers in the same cable.

Failure to Comply with National Electrical Code. Recently a subscriber filed suit against a borrower, his consulting engineer, and his contractor claiming acoustic shock due to failure to comply with the Code and REA requirements calling for a $\frac{1}{2}$ inch separation between station wire and ground wires.

Joint Use of Trench by Buried Telephone and Power Construction. Joint use of trenches for telephone service wires or cables and power wires is now permitted by the National Electrical Safety Code only if 12 inches of well tamped earth is maintained between the power and telephone facilities. Maximum economy in construction costs results with random separation. The Wisconsin Public Utilities Commission is the only state that has issued rules permitting random separation although trial installations are underway in northern Illinois and Michigan.

Radio Multiplex Concentrator Trunks

Radio multiplex circuits can be used for trunks to the control office with the Kellogg concentrator. This completes the trio of trunk usage of which the other two methods are physical circuits and carrier.

Improved Mobile Telephone Service (IMTS)

Motorola now has on the market a complete package of equipment for IMTS. We anticipate test sites on REA borrowers' systems this year. Two installations of Secode equipment have been made by REA borrowers in California.

Application Guide for Point-to-Point Radio Microwave Specification 397d.

This guide is REA TE & CM 933 which should be available by mid-May.

PE-23 Specification Cable for Rocky Soil.

REA specification PE-23 calls for the use of low or high density polyethylene as conductor insulation and low density polyethylene for both jackets. Field trials which have been made recently indicate that high density polyethylene should be used as conductor insulation and also for the outer jacket if the cable is to be plowed into rocky soil in which the crushing forces are considerably greater than in earth. The high density polyethylene is about 10 times harder than low density and has 40 to 50 times abrasion resistance. REA has a document available for use in ordering high density cable. The Outside Plant Branch of Telephone Standards Division stocks this document.

Addendum 2 - TE & CM 325, Application Guide for the Preparation of Detail Dial Central Office Equipment Requirements.

This addendum provides for the modification of the central office specification Form 558c to provide for one-party service only or one and two party service only. The document has gone to print and should be available in May.

Dancing of Figure 8 Distribution Wire.

Figure 8 distribution wire and cable having a solid support wire (.109, .13 $\frac{1}{4}$ or .148 inch diameter galvanized steel wire) as originally made has no adhesion of the polyethylene jacket to the support wire. Figure 8 wire after spiraling at alternate poles has a tendency for the wraps to migrate toward the poles where they were spiraled. The loss of effectiveness of the wrap results in increased dancing due to wind and breakage of the support wires due to vibration. Methods for alleviating the condition include increase of the sag and adding spirals at all poles thus doubling the number of spirals per span. Wire produced in recent months has good adhesion of the wire to the jacket and is not subject to this trouble.

Revision of Form 511

A revision of REA Form 511, Telephone System Construction Contract, has gone to print and is expected to become required for use by borrowers after July 15, 1964. A revised bulletin, 381-2 is in preparation which will describe the major changes that are included in the new issue of

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Form 511. It will include details on the price and availability of this publication. The List of Materials Acceptable for Use on Telephone Systems of REA Borrowers also has gone to print. It is anticipated that it will be available to borrowers, contractors, engineers and other interested parties about the middle of May.

Verification Trunks for Community Dial Offices.

In many community dial offices emergency and verification requests can be completed by the operator placing the call over operator office trunks which are also used for regular switched traffic. To block unauthorized access to the verification facilities, by persons making DDD calls, the trains are built out to require more digits than can be accepted by the originating equipment (00+ or 000+). These arrangements adequately cover the conditions normally encountered in customer telephone usage. Recent disclosures have shown that they do not afford the necessary degree of protection under unusual circumstances. The required protection can be guaranteed through the use of a trunk accessible only from the toll switchboard at the serving toll center.

Consequently some companies are engineering an additional trunk between all toll centers and each of their tributaries. This circuit will be used for verification purposes from the switchboard and not be accessible from the intertoll dialing network. At the end office this trunk can be available for extending intercepted calls to the toll center if a two-way trunk is used, but will not be accessible from the "0" level of local equipment.

Specification PE-41

Specification PE-41 for telephone sets has been accepted by the Technical Standards Committee "A" and has been distributed to suppliers. General distribution of this specification will not be made until Type A sets are added to our list of materials. All sets meeting PE-41 requirements should have greatly improved maintenance characteristics as compared with existing sets. Type B sets, when they become available, will also have improved transmission capabilities.

Specification PE-42

Specification PE-42 for Station Protectors has been issued under Bulletin 345-39, dated March 25, 1964. This specification should result in improved fuseless station protectors, and will probably result in a complete redesign of fused-type protectors in order to up-date the designs to meet present-day operating conditions.

Specification PE-40

The Technical Standards Committee "A" has now accepted ringing generators complying with PE-40 which have been submitted by Lorain, Warren, and Stromberg-Carlson. Newsletter #28, dated March 1962, reported on a field trial installation of the Stromberg-Carlson RG 5-25 equipped with a universal standby arrangement. We have not yet received sufficient data to warrant acceptance of the standby feature.